REMARKS

The present amendment is submitted in response to the final Office Action dated November 7, 2011, which set a three-month period for response, making a response due by February 7, 2012, and with the initial two-month period for response expiring on January 7, 2012, a Saturday, or by Monday, January 9, 2012.

Claims 1, 3-7, and 9-12 are pending in this application.

In the final rejection, claims 1, 3, 6, 10 and 11 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,806905 to Morimoto et al. Claims 4 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto in view of U.S. 2003/0076293 to Mattsson. Claims 7 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al in view of U.S. 2004/0013295 to Sabe et al.

The Applicants respectfully disagree that the Morimoto reference renders obvious the subject matter of the pending claims, whether this reference is viewed alone or in combination with Mattsson or Sabe.

The present invention as defined in the pending claims permits determination of a position of an object in a space coordinate system with an accuracy that makes it possible to perform a work operation using manipulating devices (roboters). Therefore, the optical recording device (a camera) is accommodated in different spatial positions and in each position, at least three and not more than five measurement characteristics are recorded and evaluated. The position of the recording device is selected such that suitable measurement characteristics optimally cover a sensitive area of the recording

device, and the intermediate angles of the visual rays from the measurement characteristics to the recording device are greater than 10°.

In contrast, Morimoto discloses using a digital camera for determining parameters such as the height of an object or its position in a coordinate system with a much lower accuracy which is not sufficient for performing work using manipulating devices.

Furthermore, Morimoto disclose that the distance between the camera and a measuring point or the area between a plurality of such points can be determined (see Morimoto, in particular, column 10, lines 1-25 and 50-53, and column 11, line s8-13 and 41-48). The disclosed parameters are determined for ***only one camera position*** and the object of interest must be chosen prior to this by specifying one or more measuring points on the screen of the camera.

Morimoto does not disclose or suggest determining the measurement characteristics of one object based on the recording from ***different*** spatial positions and to ***jointly*** evaluate the data of the three to five measurement characteristics of the ***different spatial positions*** in order to determine the position of the object in the space coordinate system. Again, this system according to the present invention provides a very high degree of accuracy. With the Morimoto system, the accuracy of the determined position of the object in a coordinate system is low, also because of the specification of the measuring points using a cursor, which is quite large, on a small camera screen.

In addition, Morimoto does not disclose that ***no more than five measurement characteristics*** are recorded. Rather, Morimoto states that "any number" of measuring

points ("*n measuring points...measuring points P1,...Pn*", column 11, lines 41-48) can be recorded. In the embodiment described in column 11, lines 14-23, for example, six measuring points are used.

In addition to the distinctions noted above, the Applicants further note that in Morimoto, all measuring points are determined manually (see column 9, line 53 to column 10, line 10). In contrast, with the present invention, everything functions automatically.

The Examiner maintains that all lenses with a focal length shorter than 155 mm can generate the necessary angle between the visual rays. The Applicants respectfully disagree. This does not only depend on the focal length, but also on the sensor size. Regarding the cameras used by the present invention, the sensor size should theoretically be between 25 to 30 mm, depending on the camera type. Nevertheless, just using such types of lenses is not sufficient. It is also necessary to create appropriate recording circumstances (considering all other conditions like possible movements of the object, tolerances, etc.) and therefore, in actual use, it is almost always necessary to use lenses with a focal length of <= 16 mm.

In Morimoto, the distances to the measuring points are determined by an autofocus device (see column 3, lines 64-65, and column 9, lines 53 to column 10, line 10). However, with the present invention, there is no autofocus device, and therefore, it cannot be used. In Morimoto, this distance determination is essential, as with it, also the scale of the image is determined. In the present invention, the scale of the image is determined based on the known space coordinates of the measuring points. In contrast, Morimoto does not use space coordinates. The Morimoto method is less

accurate due to the distance determination by autofocus being relatively inaccurate at larger distances or very demanding, which means, in turn, that is it is necessary to use costly high-end equipment in order to be more accurate.

A further distinction is that in Morimoto, the elevation angle is determined by a gyroscope (see column 5, lines 1-5 and column 9, line 53 through column 10, line 10). The present invention does not utilize or provide any gyroscope. Morimoto requires a gyroscope, as the camera is not calibrated extrinsically. In contrast, the camera of the present invention is calibrated extrinsically and therefore, there is no need for a gyroscope. However, the gyroscope provides only one camera angle and therefore, Morimoto can only determine heights absolutely. All other dimensions can only be determined relatively (that means, between the measuring points of the image, not absolutely with regard to a world coordinate system). In the present invention, the camera is calibrated completely and all six degrees of freedom can be determined absolutely.

In conclusion, then, Morimoto discloses a completely different subject matter than that claimed in the present application, the camera is directed to a fully different purpose. The handheld camera is used to perform rough measurements in the field, as described above, and is not suited to quickly determine absolute spatial positions for a production process with high accuracy.

The secondary references to Mattsson and Sabe fail to disclose the features lacking from Morimoto, so that any combination of these references still could not lead the practitioner to the present invention as claimed.

It is respectfully submitted that since the prior art does not suggest the desirability of the claimed invention, such art cannot establish a prima facie case of obviousness as clearly set forth in MPEP section 2143.01. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. ***In re Fritch***, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992).

It is submitted that the application as previously amended stands in condition for allowance. Action to this end is courteously solicited. Should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate claim language that will place the application into condition for allowance.

Respectfully submitted,

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